

Amendment and Response
Application No.: 10/623,686
Attorney Docket No.: EI-7597

REMARKS

Applicants and their undersigned attorney have carefully reviewed the first Office Action of December 12, 2005 in the above-identified patent application, together with the prior art references cited and relied on by the Examiner in the rejections of the claims. The present invention is not anticipated by, and is not obvious in light of, the cited prior art. Reexamination and reconsideration of the application, and allowance of the claims is respectfully requested.

Currently, all of the claims currently stand rejected under either 35 U.S.C. sections 102 or 103. The Examiner has also put forward provisional obviousness-type double patenting rejections for claims 1-21. Without currently commenting on the applicability of the provisional obviousness-type double patenting rejections, Applicant is willing to consider the necessity of a terminal disclaimer upon an indication of allowable subject matter in the present application.

The Examiner has also rejected claims 5 and 11 under 35 U.S.C. 112, second paragraph, as being indefinite. Claim 5 is now amended to remove the objectionable language "and the like." Naturally, the phrase was meant to cover equivalents of the listed subject matter. Applicant agrees that the phrase is unnecessary as the Doctrine of Equivalents is operable with or without the phrase. Thus, it has been deleted.

Claim 11 defines a step of "combining coal and an additive ... forming a mixture thereof" to be accomplished by introducing the additive directly into the combustion chamber separately from the coal. Claim 11 has been amended to reorganize the claim elements so that the step or procedure for adding the additive to the combustion chamber more clearly modifies the "combination" step. The scope and meaning of the claim remain unchanged by this amendment. Applicant respectfully requests reconsideration and that the rejections based upon 35 U.S.C. 112 be withdrawn.

The subject application discloses and claims a method of reducing both the amount of carbon in fly ash and the amount of NO_x resulting from the combustion of coal. The coal is combined with an additive that comprises a manganese-containing compound to form a mixture. The mixture is combusted, and the manganese-containing compound being present in an amount effective to reduce both the amount of carbon in

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fly ash and the amount of NOx resulting from the combusting of the coal in the combustion chamber. In one embodiment, the manganese compound is an organometallic compound. In another embodiment, the additive is introduced directly into the combustion chamber separately from the coal, including into various air streams of the combustion system. The method of mixing the coal and the manganese-containing compound is also operable to simultaneously reduce the amount of carbon monoxide and the amount of NOx resulting from the combusting of the coal in the combustion chamber.

It is understood that the reduction of carbon in fly ash is not equivalent to the reduction of the total amount of fly ash produced. Importantly, the invention is not about fly ash, soot or smoke reduction generally. One embodiment of the invention is about the reduction of carbon in the fly ash that does result from combustion simultaneously with the reduction of NOx. More specifically, the method and additive relate to the combining of a manganese-containing compound with the coal prior to or during the combustion of the coal. As the application notes, coal combustion systems with Flue Gas Recirculation (FGR) lower the flame temperature, which typically reduces NOx at the expense of increased carbon in ash.

Pending claims 1-3 and 6-21 were rejected under 35 (U.S.C. 102(b) as being anticipated by Zamansky (U.S. 6,206,685). Applicant notes that independent claims 1, 11, 14, 15, 18, 20 and 21, and, therefore, all the claims depending therefrom, include the element of a reduction in the amount of carbon in fly ash. After a review of the reference, including an electronic search, applicant is unable to locate any teaching or suggestion in the '685 reference of reducing carbon in fly ash through the method of the present invention. The Office Action does not identify any such language either.

Claim 19 is a method reducing both the amount of carbon monoxide and the amount of NOx resulting from the combustion of coal. Again, Applicant was unable to locate a teaching or suggestion of this element in the '685 reference and the Examiner has not identified such a teaching or suggestion. Applicant notes, however, that the '685 reference, in the background of the invention, states that "if a controlled amount of CO from the reburning zone can be introduced...the low temperature limitation of the window can be broadened and the NOx reduction enhanced." The reference appears to teach adding CO and, therefore, teaches away from the element of the present invention.

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Applicant notes that Office Action does not identify a single teaching in '685 regarding the simultaneous reduction of CO and NOx.

As each and every element of the claims is not found in the cited reference, the subject claims are patentably distinguished over the '685 reference under 102. The Examiner, however, is invited to identify the particular teachings or suggestions of the simultaneous reduction of either fly ash and NOx or CO and NOx in the cited reference. Otherwise, Applicant respectfully requests reconsideration so that the rejections based upon 35 U.S.C. 102 in light of the '685 reference be withdrawn.

Claims 1-3, 8-9 and 14-21 were next rejected under 35 U.S.C. 102(b) as being anticipated by Rolfe (U.S. 3,443,916). The Examiner states that "Rolfe teaches a manganese-amine complex that is added to coal. Upon combustion of the coal, noxious fumes and smoke are reduced (CO, NOx and carbon particles)." (citation omitted). Applicant agrees that Rolfe attempts to reduce the amount of smoke, sulfur trioxide and dioxide, sulfuric acid, carbon monoxide, the nitrogen oxides, unburnt hydrocarbons, carbon particles, and large ash agglomerates. (see abstract). Fly ash, however, is merely discussed at Col. 2 (lines 16-22). The reduction of carbon *within* fly ash is not discussed, suggested, or even recognized, much less the simultaneous reduction of carbon in fly ash and NOx.

The composition of Rolfe, as the '916 patent states, provides "a substantial reduction in noxious fume content of exhaust gases from the burning of fuels in internal and external combustion." The specific effects of use in a coal burning combustion system are described at Col. 6, lines 27-57. The simultaneous reduction of NOx and carbon in fly ash or CO is not taught or suggested. The Examiner is again invited to identify the particular teachings or suggestions of the simultaneous reduction of either fly ash and NOx or CO and NOx in the cited reference. Otherwise, Applicant respectfully requests reconsideration so that the rejections based upon 35 U.S.C. 102 in light of the '916 reference be withdrawn.

Pending claims 1, 2, 4-11 and 13-21 of the present application are rejected under 35 U.S.C. §102(b) as being anticipated by Kerley (U.S. Pat. No. 3,927,992). The reference is commonly owned by an interest in common with the present application. As such, the Applicant is familiar with the reference, and it is immediately clear, upon

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reviewing the abstract of the '992 reference, that Kerley is directed to a method of reducing the smoke and sulfur trioxide produced when burning coal by introducing a small quantity of a metal-containing compound into a combustion chamber containing coal. Reducing *soot, smoke, and irritating gases* during combustion is wholly unrelated to reducing carbon in fly ash or CO simultaneously with NOx. Although the Examiner states that Kerley reduces smoke and soot (noting that soot = carbon), this is not the same subject matter as the present invention. The subject application is not directed to reducing soot (carbon) or smoke. Thus, the present invention solves a different problem, and the claims are patentably distinct in light of the Kerley reference.

Pending claims 1-5 and 7-21 are rejected under 35 U.S.C 103(e) as being anticipated by Roos (U.S. 2005/0011413). Roos, which the Examiner cited initially in support of an obviousness-type double patenting rejection, has a common inventor and a common assignee with the subject application. Roos is directed to lowering the amount of carbon in fly ash from burning coal by a manganese additive to the coal. The Examiner contends that Roos would inherently meet the limitation regarding the reduction of NOx and CO. It is unclear whether the Examiner intends the inherency rejection to extend to the simultaneous reduction of carbon in fly ash and NOx. Clarification is requested.

The Examiner offers that a rejection under 35 U.S.C. 102(e) "might be overcome ... by showing ... that any invention disclosed but not claimed in the reference was derived from the inventor of this application." Without commenting on the validity of the inherency rejection, Applicant herewith submits a Declaration under 37 CFR 1.132 in support of patentability. The rejection under 102(e) in light of Roos is, therefore, traversed, and Applicant respectfully requests that the rejection under 102(e) in light of Roos be withdrawn.

Pending claims 1-5, 7-6, 11 and 14-21 are also rejected under 102(e) as being anticipated by Aradi (U.S. Pub. Patent Appln. No. 2004/0118032). Aradi, which is also commonly owned and shares a common inventor, does refer to manganese added to a combustion process in order to react with fuel contaminants or surface contaminants in a combustion system. The Examiner discusses the treat rates and the types of manganese used to reduce carbon/soot (not carbon in fly ash), smoke and to "control" noxious

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emissions. The Examiner does not identify a statement or teaching in Aradi of the simultaneous reduction of carbon in fly ash with NOx or the simultaneous reduction of carbon monoxide and NOx. The rejection under 102 in light of Aradi should be reconsidered and withdrawn.

Finally, the Examiner rejects claim 6 under 35 U.S.C. 103(a) as being unpatentable over Roos in view of Zamansky. Again, Roos was not invented by another. 35 U.S.C. (c)(1) reads:

Subject matter developed *by another person*, which qualifies as prior art only under one or more of subsections (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the claimed invention was made, owned by the same person or subject to an obligation of assignment to the same person.

(Emphasis added). It has been established that Roos does not qualify as prior art because it was not "invented by another." Moreover, the disclosed subject of Roos and the presently claimed invention were, at the time the claimed invention was made, owned by, or subject to an obligation of assignment to, the same person.

The Examiner also does not establish a suggestion to combine the two references. The proper application of the obviousness test of 35 U.S.C. 103 requires one to picture the person of ordinary skill in the art as having the references before him without any knowledge of applicant's invention. If the references themselves do not suggest the desirability of modifications necessary to achieve an anticipation of a claim, they do not render the claimed subject matter obvious in the sense of 35 U.S.C. 103. The necessity of avoiding hindsight reconstruction was well stated by the Court of Customs and Patent Appeals in the case of In re Rothermel and Waddell, 125 USPQ 323 at 331 (1960), wherein the court noted:

The examiner and the Board in rejecting the appealed claims did so by what appears to us to be a piecemeal reconstruction of the prior art patents in light of appellant's disclosure...It is easy now to attribute to this prior art the knowledge that was first made available by appellants and then to assume that it would have been obvious to one having the ordinary skill of the art to make these suggested reconstructions. While such a reconstruction of the art may be an alluring way to rationalize a rejection of claims, it is not the type of rejection which the statute authorizes. 35 U.S.C. 103 is very specific in requiring that rejection on the grounds the invention would have been obvious must be based on a comparison

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between the prior art and the subject matter as a whole at the time the invention was made.

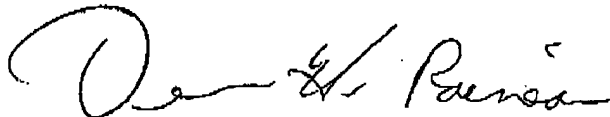
If the references are considered in the foregoing manner, it is most respectfully submitted that they do not provide a proper anticipation of the rejected claims under 103. The Examiner's rejections under 103 consist of statements identifying elements in the prior art and conclusively stating they suggest the elements of the present invention. However, the Office Action does not provide a reason for modifying the references cited by the Examiner in the manner suggested by the Examiner **except** to arrive at applicant's specifically defined construction, taught only by applicant's disclosure. The rejection under 103 is improper and should be withdrawn.

For any one or more of the foregoing reasons, Applicants submit that the present application is in condition for allowance. Applicants respectfully request that the rejections be withdrawn. Applicants will consider a terminal disclaimer to obviate the obviousness-type double patenting rejections upon an indication of allowable subject matter.

FEES

This Amendment and Response is believed to be timely filed on Monday, March 13, 2006, because the due date of March 12, 2006 falls on a Sunday. It is believed that there are no fees associated with this filing. However, if the calculations are incorrect, the Commissioner is hereby authorized to charge any deficiencies in fees or credit any overpayment associated with this communication to Deposit Account No. 05-1372.

Respectfully submitted,



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Date: March 13, 2006